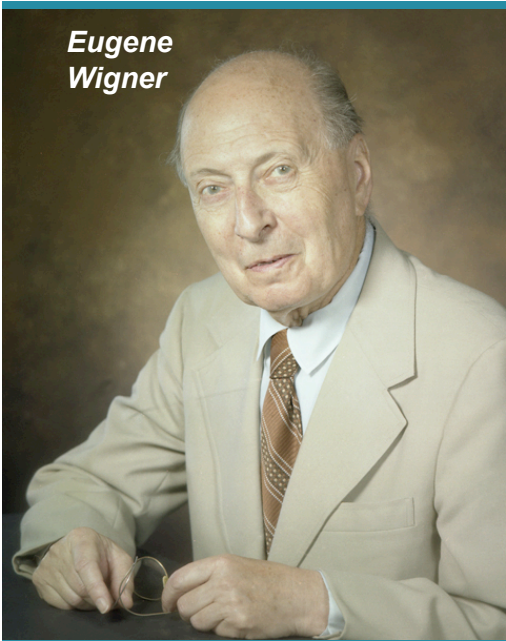


New IBM Arrives at NCCS

Eugene
Wigner



Dubbed “Eugene” after Wigner

- Oak Ridge National Laboratory and IBM have teamed up to bring the next generation of the IBM Blue Gene supercomputer, the Blue Gene/P, to ORNL
 - The new system was accepted in late September and features 8,192 compute cores and will be capable of more than 27 trillion calculations a second, or 27 teraflops
 - The system has been dubbed “Eugene,” after former ORNL director of research and development Eugene Wigner
- Wigner, a Hungarian physicist and mathematician, was an early advocate for the Manhattan Project and would later win the Nobel Prize in physics in 1963

“Selected chemistry and materials applications especially have shown strong performance on the Blue Gene.”

Thomas Zacharia, ORNL’s Associate Laboratory
Director for Computing and Computational Sciences



Eugene - IBM BG/P

- 2,048 compute nodes
- 8,192 850MHz PPC450 cores
- 4,096GB memory
- Multiple system networks
 - torus network (3.4 Gb/s per link)
 - global collective network (6.8 Gb/s per link)
 - global interrupt network
- 93 TB DDN 9550 disk (GPFS)
- 27 TFLOPS peak



Access to Blue Gene

- Access via allocated projects
 - Apply for a project
 - Approved projects will receive an allocation
 - Initial allocations will be for a year
 - Users can then apply for accounts
- Preferred projects are those that utilize the BG/P architecture to its full potential

Filesystems

- GPFS filesystems
- User space
 - /gpfs/fs1/{username}
 - source code, compilations, and submissions
 - 2GB quota
- Scratch space
 - /gpfs/fs0/{username}
 - temporary storage of data
 - swept daily
 - files older than 14 days will be removed
- Compute nodes have access to the GPFS filesystem

Filesystems

- NFS filesystem
 - /ccs/home/{username}
 - Shared home directory space
- HPSS
 - Archival storage
 - hsi used to access



Compiling

- C/C++
 - Compilers for the front end
 - xlc, xlc++, xlC, cc
 - Compilers for the back end
 - bgxlc, bgxlc++, bgxlC, bgcc, mpixlc, mpixlcxx
- Fortran
 - Compilers for the front end
 - xlf, xlf90, xlf95, xlf2003
 - Compilers for the back end
 - bgxlf, mpixlf77, bgxlf90, mpixlf90, bgxlf95, mpixlf95, bgxlf2003, mpixlf2003

Job submissions

- Submission is through LoadLeveler scheduler
- Submission of job script
 - %> llsubmit myjob.cmd
- Checking job status
 - %> llq
- NOTE: Minimum job size is 64 nodes
 - Will soon be reduced to 32 nodes

Sample Job Script – job.cmd

```
#@ job_name = LoadL_Sample_1
#@ error = $(job_name).$(jobid).out
#@ output = $(job_name).$(jobid).out
#@ environment = COPY_ALL;
#@ wall_clock_limit = 00:20:00
#@ notification = error
#@ notify_user = {username@email.gov}
#@ job_type = bluegene
#@ bg_size = 64
#@ account_no = {Project ID}
#@ class = prod
#@ queue

/usr/bin/mpirun -exe {executable name} -mode VN -np 48
    -verbose 1 -args "-t 1"
```

URLs to remember

- Project Application
 - <http://www.nccs.gov/user-support/access/eugene-project-request/>
- Web site for Eugene
 - <http://www.nccs.gov/computing-resources/eugene/>
- Need Help?
 - help@nccs.gov

<http://www.nccs.gov/computing-resources/eugene/>

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Eugene is a 27 TF IBM Blue Gene/P System operated by the NCCS. Eugene is not allocated as part of the NLCF and access is limited to ORNL staff and [university partner](#) members.

Eugene consists of 2048 850Mhz IBM quad core 450d PowerPC processors and 2GB of memory per each node. Eugene has a front-end node for user logins and compiling of codes. Users submit their jobs from this front-end node and cannot directly login to a compute node. Eugene has 32 I/O nodes and each submitted job must use at least one I/O node. This means that each job consumes a minimum of 64 nodes per execution.

Recent News

- [ET hoping to cash in on Chattanooga's VW plant](#)
- [Researchers Conduct Breakthrough Fusion Simulation](#)
- [Oak Ridge Labs Wants More Efficient Supercomputers](#)

Contact Support
865-241-6536
help@nccs.gov 

Questions?



<http://www.nccs.gov>